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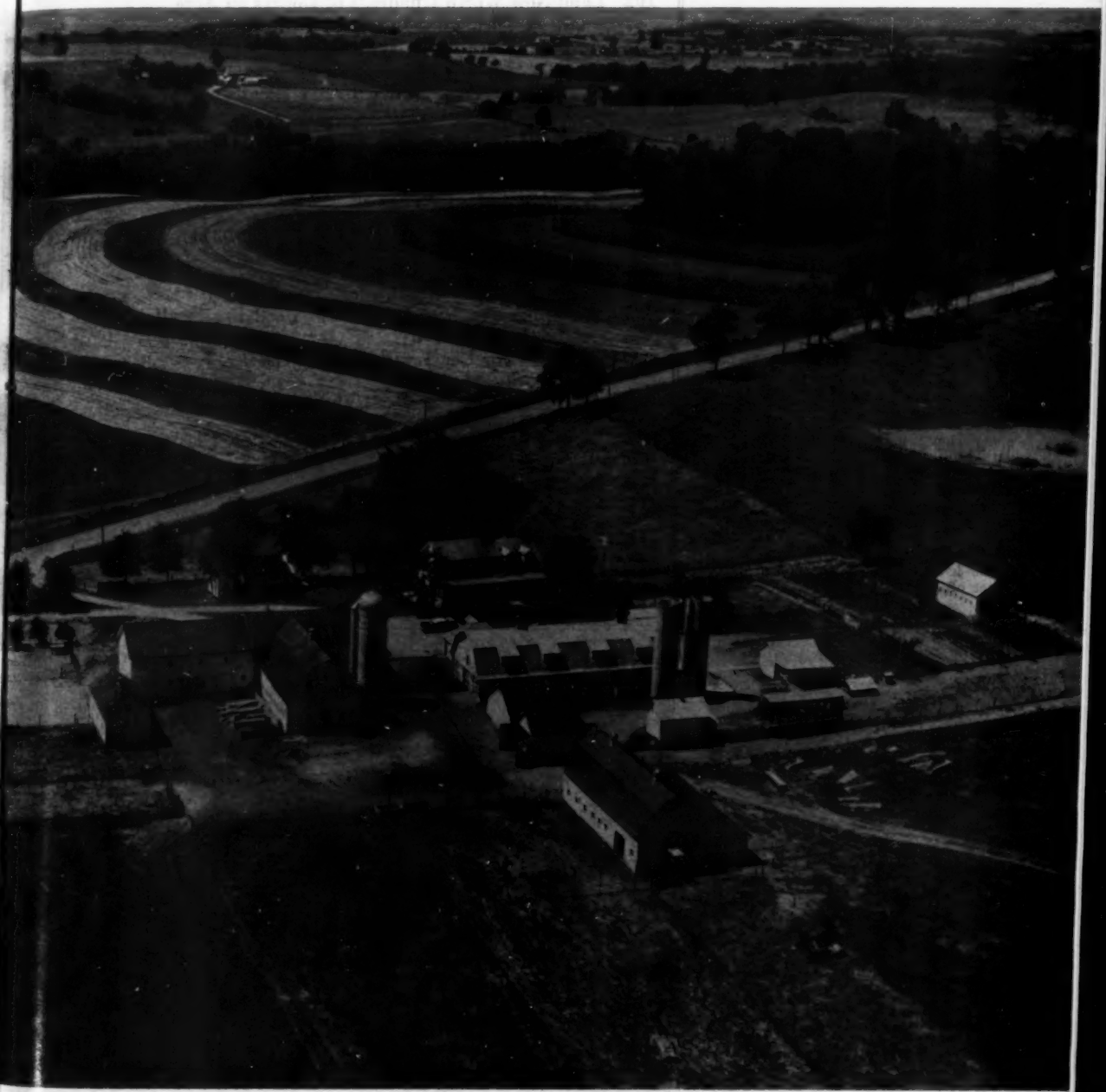
TECHNOLOGY & SCIENCE

DECEMBER 1962

Soil Conservation



SOIL CONSERVATION SERVICE • U. S. DEPARTMENT OF AGRICULTURE

VOL. XXVIII, NO. 5 DECEMBER 1962

Growth Through Agricultural Progress

Soil Conservation 25 Years Ago

"White Eyes Valley is small, yet the spread of strip cropping into the hill country is typical of the growth of this soil-saving practice in rolling Ohio. County agents have their hands full answering questions and requests. Farmers who have adopted it say they would not go back to the old-style farming for two thousand dollars."

"Protecting eroding areas by the use of natural vegetation is not land retirement; it is the rededication of the land to the production of the crops for which it is best adapted. A gully controlled by natural vegetation may produce profitable crops of timber and farm wildlife; a steep slope, naturally vegetated, may, with the exercise of a little caution against overgrazing, be made to furnish economic crops of pasture or prairie hay."

". . . there is more gold in the roots of the grass than has yet been found in the ledges or veins beneath the surface (east of Sacramento, Calif.)."

COVER PICTURE — "Conservation Pays"—as illustrated in this view of the Ivan Morris farm plant in its setting of contour stripcropping and farm pond (r. center) in Fairfield County, Ohio.
—Photo by E. W. Cole.

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Soil Conservation

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FRANK B. HARPER, Editor

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Bigger Profits Spur To Conservation Farming

By Carroll H. Dwyer

CONSERVATION farming has come into the widespread use it enjoys today first of all because it pays.

I have asked many soil conservation district cooperators just why they were becoming conservation farmers. Their answers have covered a wide range of reasons, but when analyzed almost every one had one basic concept: In their opinion, it was a more profitable way of farming. That one fact is the key to why the great amount of conservation farming is practiced—it's a more profitable way of farming.

True enough, they may not have started a conservation plan for that reason. They may be true conservationists at heart and would follow conservation regardless, but there are few who can afford to be in this class. And few farmers who became conservation farmers simply because it was the popular thing to do have stayed conservation farmers very long unless they were convinced that it was more profitable.

The profit motive may be expressed in a variety of ways—as the means of conserving soil or water resources, as savings of time or equipment, as an increase in crop yields, or as reduced operating expenses. Basically, however, each type of benefit may be reduced to dollar terms—terms which we can all understand and appreciate.

We know that every farm operation or practice, regardless of what it is, must meet two tests if it is to continue. It must be physically feasible, and it must be economically feasible. Conservation practices are no exception.

Unfortunately perhaps, there is no stock answer or quick rule of thumb to give a categorical answer as to whether a conservation practice or measure is economically feasible. Each farm presents different conditions which must be understood before we are able to advise what the economic impact will be.

60 shoats grazing 3 acres of irrigated ladino clover that provided no pasture 30 days earlier without water. Operator W. C. Hollowell near Greensville, N. C., figured a daily saving of 4 to 6 bushels in corn fed.

Conservation on the land near Dayton, Wash.

Suppose, for example, a soil conservation district cooperator who was a truck crop grower has some lower lying land which floods periodically and has a high water table. Best conservation use of this land might be achieved by installing a shallow surface drain to remove standing floodwaters quickly. The field could then be seeded to an adaptable high-yielding pasture grass.

This improvement, however, would be of little, if any, value to

Note.—The author is soil conservationist, Farm and Ranch Planning Division, Soil Conservation Service, Washington, D. C.

the truck crop grower. He probably would not have livestock to use the pasture. If he rented the pasture he would have to fence it. Therefore, it may be a physically feasible conservation improvement, but for the truck crop operator it is not economically feasible. On the other hand, if the landowner were a dairyman, the improvement might be highly profitable.

Age of the operator may be another deciding factor. A younger man may be willing to make conservation improvements which may actually show a loss in income for a short time, but which will result in long-term benefits. An older operator might not be willing to make the improvement unless its benefits were realized immediately.

In considering conservation improvements, or any other change in method of operation, there are two major questions: (1) What will the cost be, and how long will it take to repay that cost? (2) What effect will the change have on the system of farming, on yields, and on net farm income?

Half a dozen questions, each having a bearing on the major questions, also need to be considered by the prospective conservation farmer or rancher:

(1) Will his present machinery be adequate or will he need additional or specialized equipment? (2) What effect will the change have on his labor requirements, both as to quantity and timing? (3) Will he have a market for the crops to be grown, either in the market place or through livestock? (4) Will a single change or practice give the desired benefit, or are additional changes or practices necessary? (5) Will these changes require additional capital for fences, buildings, livestock, or special equipment? (6) Will he have adequate capital resources or sources of satisfactory credit to make effective use of his improvements?

It has been found that in almost every instance where an individual has been disappointed in his conservation program he had failed to consider one or more of these questions. The Soil Conservation Service has developed a technique by which it can help in providing information on most of the questions. This information, together with the operator's knowledges of his farm, should give him adequate information to reach sound decisions on his conservation program.

Once basic cost of production data are available for the crops produced, along with physical data such as are required for developing a conservation plan in any event, economic analyses can be made in a matter of a few minutes.

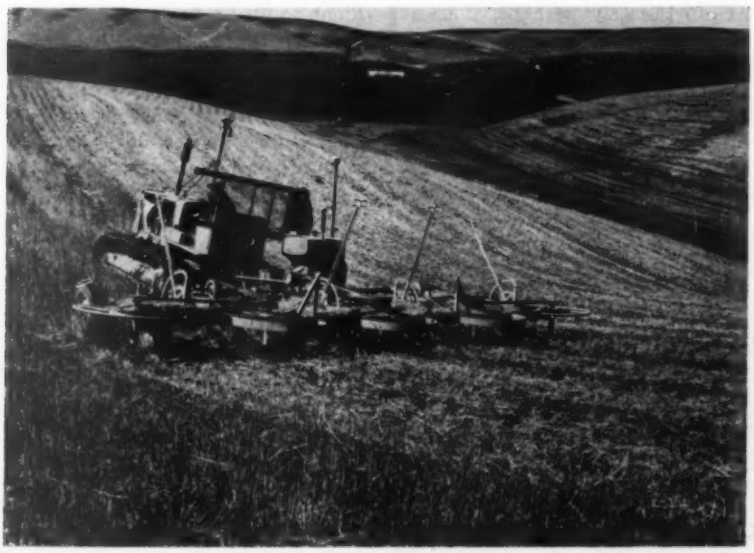
Uncounted experiences and special studies have confirmed that conservation farming is indeed profitable. For example, a 5-year study by Washington State College and the Soil Conservation Service in the Palouse area conclusively showed that conservation farmed units returned 38.8 percent more net income an acre than did farms farmed in the regular manner. This amounted to $8.31 an acre a year.

Elsewhere, it also has been found that for each dollar invested in conservation practices, the rate of return has been from 30 to 60 percent interest a year for a number of years.

Such profitable benefits are repeated wherever conservation farming is practiced. They add up to the fact that proper use of soil and water conservation measures is a more profitable way of farming. In addition to being more profitable, it also is a means of maintaining or improving these and related resources so that our community, State, and Nation each is a stronger and more enjoyable place to live.

◆

Outdoor recreation is becoming a marketable "crop" for farmers in many areas. Publicly provided recreation facilities cannot keep up with the booming demand. The demand can be met on privately owned lands—farms, ranches, and woodlands that make up nearly three-fourths of our land area. Much of this land is near population centers. Some farmers have opened hills to skiers and installed ski tows. Many have taken in summer vacationers or provided camping or hunting areas. Others have farm ponds or reservoirs for fishing, boating, and swimming.



Stubble cutter operating in Walla Walla SCD in Washington's Palouse. Stubble increases moisture going into soil.

Pasture and Livestock Boost Farm's Income a Third

By Lester Solomon

J. W. Cross.

Author with J. W. Cross' burley tobacco on Class I land in mid-July.

CONSERVATION made it possible for J. W. Cross and Sons of Hickory Point to change their 650-acre corn-wheat-tobacco farm to one of the outstanding livestock operations in upper middle Tennessee. They figure the changeover has stabilized and increased their income by at least 35 percent.

The Cross program was developed through the Montgomery Soil Conservation District according to a conservation plan developed with the help of the Soil Conservation Service. Cross Senior has been chairman of the Montgomery district for the past 17 years, and was the first farmer in the district to work out a conservation plan. He also is past secretary-treasurer and vice-president of the Tennessee Association of Soil Conservation Districts and chairman of the State Agricultural Conservation Program Committee.

The soil with which the Crosses work is mostly red, rolling cherty land with some hardpan soils on the more level areas. The upland areas erode easily. Only about 25 acres of the farm is Class 1 land, suitable for intensive cultivation.

As a result of changing from row crops to grass and other feed crops, the Crosses now are able to run 96 head of polled Hereford brood cows and 4 herd bulls, plus calves. They are kept in tiptop shape for marketing at the best possible prices by a feeding program made up chiefly of high-quality roughage.

The cattle graze almost yearround on more than 450 acres of permanent, fertilized pastures.

"The pasture must be considered as a crop, just like corn, tobacco, or soybeans," J. W. Cross said, "and this means adequate fertilization and careful management."

About 250 tons of corn and cane silage is fed to the brood cows each year, plus hay harvested from extra spring growth of pastures. Oats, grown on Class I and II land in rotation with the silage crops, and sericea also are used for hay. Average silage yield is 16 to 20 tons an acre.

Basic pasture plants grown are orchardgrass, fescue, and ladino clover. Sericea is kept clipped to give tender new growth for summer grazing, along with Kobe and Korean lespedeza. A fescue-blue-

5-year-old pasture of fescue, orchardgrass, and ladino clover.

Note:—The author is work unit conservationist, Soil Conservation Service, Clarksville, Tenn.

Wayne Cross (r.) shows how the natural draws on farm are seeded and maintained as sod waterways.

grass-ladino pasture is reserved for winter grazing.

Seed production is a profitable sideline to the Crosses' livestock operation. Last year they harvested about 10,000 pounds of orchardgrass seed, 4,000 pounds of fescue, and 2,000 pounds of sericea.

The Cross conservation program has been intensively applied. Nearly all idle, eroded, or grownup land has been cleared, smoothed, and established to pasture.

Three ponds were built to serve pastures not otherwise supplied with stockwater. All fields cropped in the past have been terraced, with regular farm machinery by a method referred to by other farmers adopting it as the "J. W. Cross Method." Sod waterways have been established in virtually every draw on the Cross land.

With the senior Cross' increasing civic activities, his son Wayne has assumed more and more responsibility for operating the farm, of which only about 5 percent is in row crops.

Banker "Wouldn't Lend a Red Cent"—

Land Now Worth Hundreds of Dollars an Acre

By L. Bard Blackham

FROM land that his banker said he "wouldn't lend a red cent on" 30 years ago George H. Seegmiller has developed a farm near St. George in Utah that today is worth several hundred dollars an acre.

Seegmiller started back then with 70 acres of saltgrass and swampland in the Virgin River Valley that grew no crops and supported only 18 to 20 head of cattle during the summer—or about one-fourth animal an acre. This year he grazes 435 head on 110 acres of irrigated and fertilized rotation pasture, including much of the original 70 acres. He gets about 8 months' pasture, supplemented by only a little dry alfalfa hay. The animals' gains average 1 to 1½ pounds a day.

This pasture Seegmiller is examining —smooth bromegrass, orchardgrass, alta fescue, and ladino clover—has 16 times its original carrying capacity.

A staunch conservationist, he started developing his land before there were any organized agencies in the area to give him technical assistance. When he bought the original 70 arces, he coudn't ride horseback over parts of it, because it was so swampy and grown up in reeds. Even with irrigation water on the land, only about 15 acres ever got wet—and this produced only saltgrass and reeds.

"It didn't take long to see the land would never be profitable in that condition," Seegmiller recalls. "In the beginning, I even raised strawberry clover seed in my garden in St. George to plant on that farm."

The clover did well and provided cover for the land. Gradually, he expanded his program and bought saltgrass land adjacent to his farm.

When the Soil Conservation Service established an office in St. George, Seegmiller was one of the first to seek technical advice and assistance. Following recommendation of technicians, he drained his land, plowed up the saltgrass, and leveled the ground. He obtained various grass seeds from the Dixie Soil Conservation District, of which he was to become chairman, and found that tall wheatgrass did best on his salty land.

This grass was left in for 5 years after planting, to build up this type land, during which time he made about $100 an acre from the sale of grass seed, in addition to pasturing about one cow to the acre each year. After the 5 years, there were no bare spots on his land, and it was ready for other crops. As each

Note.—The author is work unit conservationist, Soil Conservation Service, St. George, Utah.

Part of cattle herd grazing on 110-acre irrigated pasture.

piece of land reached the end of its 5-year program, Seegmiller chopped up the grass and sod in the fall, plowed it under, and planted other crops the next spring, such as oats, barley, alfalfa, and better grasses.

He now has land planted to orchardgrass, smooth brome, red clover, fescue, ladino clover, strawberry clover, and alfalfa, and says they all do well. He gets five cuttings of alfalfa every year, with a yield of 6 tons an acre. In addition, he raises wheat, barley, oats, and grain and forage sorghums and says yields are comparable with those anywhere in the valley. He was unable to raise any grain crops at all on these lands until his conservation program went into effect.

Through the years, he has improved some 200 acres, and today his farm consists of 350 acres, some of the best of which once was part of the old "saltgrass" country. Water that in the beginning irrigated only 15 acres, now irrigates 150 acres efficiently. He picks up the tail water from each field, stores it in a pond for later use on another, or irrigates other lands directly. He also picks up tail water from surrounding farms and stores it in reservoirs for later use. In fact, he just about "wears the water out" by the time he is through with it.

In addition to his farming interests, Seegmiller for many years also has been a successful rancher on the Arizona strip.

He says he figures his cash outlay in the land-improvement program would average about $75 to $100 an acre, including total cost of draining and leveling and constructing concrete irrigation ditches. He drained 285 acres with 2¼ miles of open drains, leveled 350 acres, put in 11,074 linear feet of concrete ditches, built 2 overnight storage ponds, and installed 1,310 small structures in his irrigation system.

Seegmiller has sold as much as $100 an acre of seed from this tall wheatgrass grown during 5-year leaching period before planting improved permanent pasture grasses on land drained, leveled, and planted at cost of $80 to $100 an acre.

◆

This sign is used in Fayette County, Pa., in many public buildings and on special occasions.

"Our aim," says Mrs. Jacob Cover, Secretary and Treasurer, "is to keep the public aware of the work being accomplished by using every possible opportunity to present 'Conservation Pays!'"

(She also reports that all of the district directors subscribe to SOIL CONSERVATION as well as having the magazine sent to local public libraries and Vo-Ag teachers—Ed.).

American Tree Farm System Major Conservation Movement

By J. C. McClellan

THE words "tree farming" have a long history, but the first forest to be formally called a "tree farm" dates back to June 1941. That was when the Weyerhaeuser Company, believing man must assist Nature in renewing the forest by actively tree farming, proclaimed a 129,000-acre forest tract in the State of Washington as the "Clemons Tree Farm."

In November the same year the American Tree Farm System as a member of the Nation's resource conservation team was formally adopted by the National Lumber Manufacturers Association, and broad standards were set, though the first tree farms were not formally certified until April 1942, in Alabama.

It was during this same time that the conservation of soil, water, grass and timber lands, and wildlife was coming into wide-scale recognition and practice. This was through (1) soil erosion control demonstration projects; (2) through U. S. Forest Service, Soil Conservation Service, and other Civilian Conservation Corps camps; and (3) through soil conservation districts which farmers formed under State enabling laws.

One of the camps was at Snohomish, Wash., where farmers in the pioneering local Washington Forest Products Cooperative Marketing Association were to be among the first individual small-woodland owners to become certified "tree farmers." In another SCS camp area, at Montesano, Wash., the new voluntary tree-farming movement likewise received enthusiastic acceptance.

The tree farm system now has become a major conservation movement in America, winning the respect of forest industry representatives, conservationists, and farmers throughout the land.

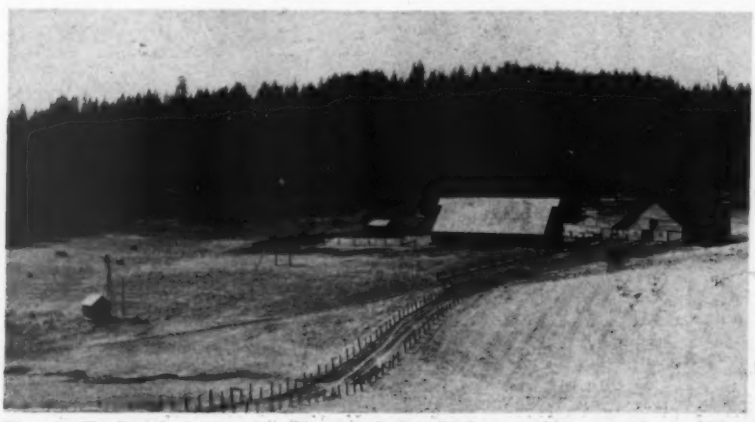
Now in its 21st year, the system has enrolled almost 24,000 tree farmers in 47 States, with a total acreage of nearly 60 million acres of forest and farm woodlands. About 3,000 tree farms and 3 million acres of forest are added each year. The objective is to encourage all private forest landowners to:

(1) Protect their woods from fire, insects, diseases, and harmful grazing; (2) harvest in a manner that insures repeated forest crops; and (3) plant idle acres to trees.

Tree farming is a genuine conservation practice because of the resulting multiple benefits. The soil is protected, because cutover areas are promptly reforested after logging is completed, or logging is selective to encourage Nature to reforest an area. Disturbance of the soil during logging is kept to a minimum.

With trees on the land, we are assured a constant flow of fresh water, because rain or snow water drains slowly into the streams and is made available for our everyday needs. Wildlife benefits, because harvesting trees encourages new growth of plant life, especially the important "forest edge" for food and cover. Recreation opportunities are created as forests are established and renewed, because people love to go into the woods and relax and play.

Tree farmers know there is money in growing wood crops. Forest industries are popping up all across the country with huge appetites for pulpwood, veneer logs, sawlogs, poles, and other timber products like naval stores



The O. K. Smith farm near Hayden Lake, Idaho, combines cattle ranching and tree farming.

Note:—The author is chief forester, American Forest Products Industries, Inc., Washington, D. C.

Tree Farmer Hugh W. Alger of Towanda, Pa., proudly nails up his sign to tell neighbors he is managing his woodlands wisely for production of future crops.

gum, and Christmas trees more than 5,000 different kinds of wood products Americans need and use.

Tree farms vary in size from private commercial forest holdings of thousands of acres to farmers' small woodlots. The American Tree Farm System is administered nationally by American Forest Products Industries, which took over from the National Lumber Manufacturers Association in 1946. State forest industry committees administer the program through State tree farm committees; while the associations operate through State or regional tree farm or forest practice committees.

Forest industries, as the ultimate sponsors of the tree farm system, are, of course, primarily interested in assuring themselves a steady supply of timber; but they also practice multiple-use conservation. More than 2,000 foresters —many from State government conservation agencies but most from the forest industries themselves—serve as inspecting foresters to assure sound forest management. In deciding whether to certify a woodlot as a tree farm, the State tree farm committee is guided by the findings of the inspecting forester.

The American Tree Farm movement has been closely identified with the country's soil and water conservation effort since the movement's start. For example, the head of American Forest Products Industries, Inc., Charles A. Gillett, as a State forester in Arkansas, helped prepare the enabling legislation for soil conservation districts in that State—the first such legislation enacted in the Nation. He later served on the Arkansas State soil conservation committee, the first one in the country.

Many conservationists, meanwhile, have found that the American Tree Farm System is actually another tool in their conservation kit to assure the continued planning and application of conservation practices, particularly in soil conservation districts, where virtually all of today's and tomorrow's "tree farmers" are to be found.

Grass-Water Conservation Brings Idaho Farmer Results

By Donald N. Davison

CONSERVATION farming helps Grove Phelps of Bennington grow most of the hay and feed he needs for his livestock and thereby boost the profitableness of his diversified Idaho farm-ranch operation. It includes raising sheep and beef cattle and operating a small dairy herd.

His setup includes 1,860 acres of range—1,180 of it Taylor grazing and State lands—and 752 of cropland. Phelps—Bear Lake County's 1961 "Grassman of the Year"—has a forest permit for two bands of sheep, but grazes only one band, thus assuring excellent pasture conditions. Similarly, only half of the private and leased range is grazed each spring, as part of a rotation system to insure sustained range operation. His conservation system includes watering and salting facilities on the rangelands for better grazing distribution.

"No operation can be successful without some planning," Phelps says of his plan worked out with the help of the Soil Conservation Service, "but a farmer has to be ready to change his plans as conditions and times dictate. We farmers need to keep up with new technologies, improved varieties, and better farming methods."

The Bear Lake Soil Conservation District cooperator runs 1,250 head of Ramboullet ewes, 12 milk cows, and 85 head of Hereford breeding cows. His calf crop has been averaging 95 percent and lambing 135 percent. Calves and lambs are sold to local buyers.

Cropland is the key to the success of the overall operation. Phelps' plan consists of 4 to 5 years of

Note.—The author is work unit conservationist, Soil Conservation Service, Montpelier, Idaho.

Phelps and sons Allyn (l.) and Marden have reason enough to smile while examining rank irrigated grass-alfalfa stand.

alfalfa followed by 2 years of grain before reseeding to alfalfa. He uses bromegrass in his mixture, and a lightly seeded grain nurse crop. He grows mostly barley and some oats for feed. Phelps spreads barnyard manure on his land and also uses fertilizer. Average yield of barley have been about 75 bushels, and his hayland yields about 4 tons of good quality hay an acre. In 1961, Phelps harvested 200 tons of high-quality alfalfa hay from the first cutting alone on one 80-acre field.

But they had little cause to smile about this poor hay stand on land not properly prepared for irrigation.

There are 35 acres of native grassland on the farm and 35 acres of grassland reseeded to alfalfa and bromegrass. This pastureland originally was wet meadows. In 1954 and 1956, Phelps installed 4,600 feet of tile drain, and an overnight storage reservoir for sprinkler irrigation. The rest of the drainage water was applied to land leveled for border irrigation.

Phelps estimates that in normal years the flow from the tile drains average about 1 cubic foot per second. This extra water, added to shares from the Bennington Irrigation Company, is usually enough for his irrigation needs. One gravelly, shallow 20-acre field formerly required four times as much water to irrigate by flooding as is now required by the sprinkler system.

"My drains and sprinkler system have paid for themselves several times over on this type of land," Phelps says. "I had too much water on part of the farm and not enough on the rest."

Phelps is president of the Bennington Irrigation Company and recently, with the assistance of the soil conservation district and some Agricultural Conservation Program aid, started construction of a mile-long pipeline to conserve water in a leaking ditch.

Phelps also plans to utilize some of his neighbors' waste water which crosses his land and creates a wet situation, by piping it about a quarter of a mile into a sump pit to be used in his sprinkler system. He likewise is considering drilling a well to irrigate 100 acres of dryland, several miles from the main farm, to produce hay and related livestock crops.

Arkansas Farmer's Conservation Money-makers

By Max D. Bolar

CONSERVATION on his woodland is one of the important money-making soil and water saving measures Chairman N. K. Calloway of Arkansas Union County Soil and Water Conservation District uses on his farm at El Dorado.

Calloway's interest in conservation on woodlands started after World War II, when cotton farming on the hills was on its way out.

"We hill farmers knew we had to change with the times," he recalls. "It was either change or lose what we had. Livestock was coming in about that time, and there were the big wood-using industries trying to get us interested in tree planting. I got interested."

He not only planted trees on his own farm but he contract-planted for other farmers and landowners. In fact, he designed and manufactured a tree-planting machine which sold in several States. In one of the busiest planting seasons, he contract-planted more than a million trees.

Here's how he has made conservation on his woodland return maximum profits:

"Bless my soul! I wouldn't think of letting anyone cut my woods for me—that's where more than half of the money is made," he says, after more than 15 years' experience in marking, cutting, hauling, and marketing his own woods products. "Do it yourself.

"You wouldn't have someone raise and harvest your other farm crops if you can do it yourself. Why should your woodland crops be any different from other crops? The tractor-drawn farm trailer and chain saw have taken the place of the slow team, axe, and crosscut saw. These modern tools have made it easier for farm folks to do their own woods work."

"Moneywise I'll prove my point," Calloway explains. "Which would you rather have—$5 a cord for pulpwood, or $13? That's the difference in selling stumpage and in marketing your own. With sawlogs, there is $15 to $25 a thousand board feet difference.

"There are other advantages. Selling on the stump you are at the buyer's mercy. Cut your own and deliver it to the mill, and you get good log scale. Also, if you know your log grade you can get an even better price. Don't forget, either, that when you cut you're going to do less damage to your woods then when the other fellow cuts."

But Calloway's activities are not limited to woodland conservation. Through the soil conservation district with Soil Conservation Service technical help he has helped to pioneer other conservation fields. For example, his planting of Pensacola bahiagrass was one of the first in south Arkansas. And he was one of the first to sod his pastures with bermudagrass.

He also built two ponds to meet the needs of his growing and likewise money-making beef and hog herds. His ponds bring him additional profitable benefits. They not only provide for the Calloway's own sport and table, but he also collects a reasonable fishing fee from a constant stream of recreation-bent city folks from nearby El Dorado.

Meantime, back at the woods, Calloway always finds time for improvement. He has completed his timber stand improvement to make room for fast growing pine and high quality hardwoods, and also learned from foresters how to mark and cut his own woods selectively. For his woodland conservation work, Calloway is recognized by the major wood-using industries as a Certified Tree Farmer.

Calloway demonstrates chain saw at one of frequent demonstrations in his woodland.

He is proud of his certified "Tree Farm" sign Forester John Collins of International Paper Co. helps him hold.

Note.—The author is woodland conservationist, Soil Conservation Service, Little Rock, Ark.

Economic Factors Essential in So

By Donald Willia

THE financial gain that results from successfully completed conservation programs is a principal benefit to the individuals or community involved. Conservation financing through credit or cost-sharing accordingly very often can mean the difference between getting a farm or watershed conservation program started or having no program at all.

Behind every adequate conservation job on the land there is a basic conservation farm plan, based on a detailed soil survey. This plan includes the safe uses and treatment for the land and the measures that will protect and improve the land and farm water resources, contribute most to a sound management program for the farm, and aid in the solution of watershed and other resource problems of the community.

It is essential that these physical adjustments fit into a system in which cropping and livestock operations make use of the land, labor, buildings, and equipment, and the financial resources of the farmer in such a manner that his farm is maintained as an income producer. In short, the farm conservation plan simply ties together the physical changes in land use through conservation practices with sound farm business.

A well-planned conservation program usually calls for some financial outlay, and often for temporary economic sacrifices while the new system gets into effective operation. Farmers naturally are more interested in using the soil and water conservation measures that can be shown to be profitable. We accordingly find it essential to be able to give the farmer estimates of the expected costs and returns involved in adopting a conservation program.

The Soil Conservation Service works in cooperation with Federal and State research and extension economists and soil conservation district governing bodies in evaluating economic problems that arise. They come up in connection with planning and technical assistance to the districts, in watershed projects, and in the Great Plains and other conservation programs in which the Service shares responsibilities.

To this end, we have several conservation specialists with economic training and experience in our farm and ranch planning division, in our engineering and watershed planning units, and elsewhere as needed. We also seek to have all of our planning and other people giving technical assistance aware of and informed as to the probable economic effects that the installation of conservation measures, like other capital improvements, will have on farm operations.

Over the country, a considerable amount of information has been obtained on cost and returns of conservation practices. We hope to have more of this information, to supplement consistent observation and experience over the years that such practices help the farmer operate more efficiently and profitably. When bankers, for example, are called upon to lend money for installing farm or watershed conservation measures, they naturally welcome all the information they can get as to how those measures

Arnold Theede's farm in Dodge County SCD near Danville, Wis., shows conservation farming pays, as does the Lawrence Ehrke place beyond.

Note.—The author is administrator, Soil Conservation Service, Washington, D. C.

nSound Conservation Program

y Donald Williams

may be expected to pay out.

The Soil Conservation Service is the agency responsible for technical leadership in the Department of Agriculture's soil and water conservation and watershed activities. As such, it encourages farmers, watershed organizations and others with whom we work, at their request, to take advantage of all available facilitating services, governmental or private. There seems to be general agreement in such responsibile quarters, for example, as the Department's Soil and Water Conservation Advisory Committee for continued encouragement of State, local, and private financial support for soil conservation districts and the soil survey.

It is Department of Agriculture policy to encourage private lending agencies to make needed loans for soil and water conservation to the extent possible, with Department authorities for such loans used only when private credit is not available. These authorizations include both direct and insured loans through the Farmers Home Administration for applying conservation practices. The 1954 Watershed Protection and Flood Prevention Act provides for Federal loans for watershed activities. In addition, of course, there are the cost-sharing provisions of the Agricultural Conservation and Great Plains Conservation programs, with emphasis upon permanent-type conservation practices.

We have come a long way in State, local, and private financing of our conservation undertakings. Twenty years ago, for example, financial support to the soil conservation district movement was almost entirely from the Federal Government, as it had been for the earlier erosion control project and Civilian Conservation Corps work. Today, people are combining local, State, and Federal effort to accomplish their conservation objectives.

This healthful trend was confirmed in a study the Soil Conservation Service made to find out how much local, county, and State money or its equivalent was being used for the soil conservation districts program, aside from bank or other credit. We learned that non-Federal participation valued at $1 was being made to the districts' program for operating costs for every $3 made available from the Federal Government. An earlier study showed that the farmers' outlay for materials, labor, and machinery operation, and other costs was about five times as much, on the average, as the Federal Government's contribution in technical or other assistance.

The non-Federal contributions included State and county appropriations, facilities, or services. They also included local contributions by private individuals, civic and municipal groups, business firms, associations, and clubs.

Another important form of local help to districts, on which it would be difficult to place an exact dollar value, is the time and services given by public-minded individuals and others who believe in conservation and support it.

These developments only confirm that we most certainly would not be experiencing today's continuing farm and watershed conservation expansion if it did not pay its way—and more!

Money-making purebred Angus cattle knee-deep in tall fescue and Manganese bur clover on Fred B. Wilson farm near Duluth, Ga.

Snow survey team climbs mountain watershed.

SNOW SURVEYS MEAN DOLLARS
For Agriculture and Industry

By Robert F. Tegner

FROM Winnemucca to Wenatchee and from the Rogue River to the Rio Grande Soil Conservation Service and cooperating snow survey men are eyeing the approaching winter as they inspect their skis and snowshoes and tinker with their tractor-type machines designed to "go in the snow."

By January, members of this far-flung, mostly part-time, crew of about 1,100 will be making their monthly forays into key mountain snowsheds. From this effort, involving 1,400 snow survey courses, come monthly outlook reports that have become "bestsellers" among agricultural, business and industrial, and other water users of the West. These reports indicate how much water should be available during the coming growing season, and how much for carryover to the following year. Federal, State, and local agencies and private interests cooperate in this economically significant venture.

The Soil Conservation Service coordinates snow survey and water-forecasting activity in 11 Western States. The California and British Columbia Departments of Water Resources carry out their own surveys, the data from which are carried in the overall reports, including the key April Westwide water forecast.

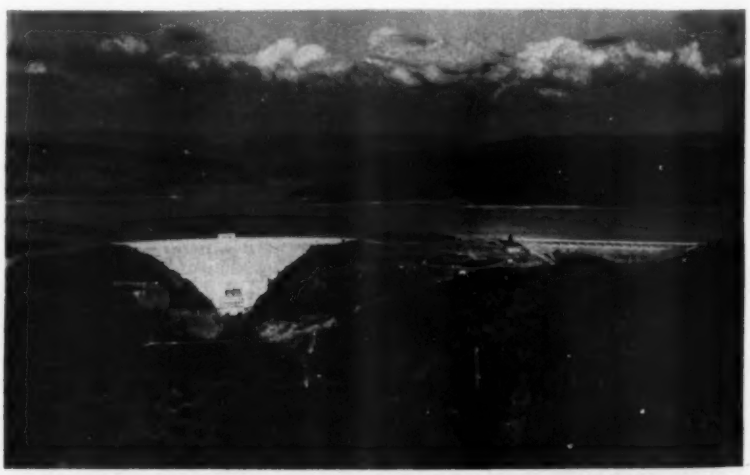
The economic benefits accruing from this activity are more than considerable: Water supply is important to everyone—business, agriculture, soil, water, forest, and other conservation interests, and to the man on the street. For that reason, data from the snow surveys are made available not only to farmers and ranchers, but to flood-control agencies, municipalities, power companies, and many others.

In the West, most of the water supply falls on the mountains in winter as snow, then melts and runs off to irrigate farmland, turn power generators, and supply other water needs of millions of people. The West wants—must have—infomation on how much of this "gold" it can spend each summer, how much it can save for the future. To find out, the snow surveyors go where the water is stored—to the mountain snowfields. In addition to the overland snow surveys, other surveys are made by means of aerial photos of snow markers set up in remote areas.

Knowing with reasonable accuracy in advance how much water may be expected and how much has to be managed in private and Government reservoirs well may spell the difference between success and disaster for the water users, in addition to contributing to another economically important factor of benefit to all—flood control.

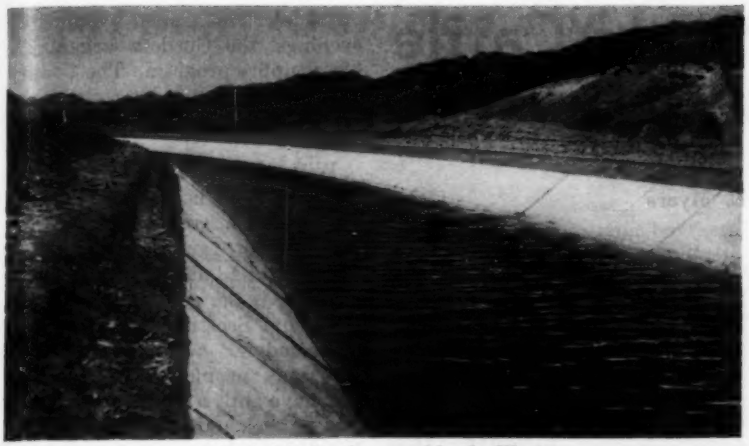
Reports of the Columbia Basin Inter-Agency Committee show, for example, that from 1951 to 1961, potential flood damage of about $60 million was averted through control operations on the network of multipurpose dams in the Columbia River system. A substantial part of the data for planning control operations came from the snow surveys.

In Oakland, Calif., Manager F. B. Blanchard of the East Bay



East Bay Municipal Utility District's Pardee Reservoir on Mokelumne River supplies water to a million people in east San Francisco Bay area. Snow surveys and precipitation data help in managing water.

Note:—The author is field information specialist, Soil Conservation Service, Berkeley, Calif.



A typical irrigation canal in the West.

Municipal Utility District's water resources and planning division cited last spring's operation as an example of how water-supply forecasting means extra dollars in the utility treasury. Relying on forecasts of the California Department of Water Resources, EBMUD managed release of 160,000 acre-feet of water to keep its relatively small generator going through the spring. Power is a byproduct which EBMUD sells to Pacific Gas and Electric Company. Return to the utility is about $1 from each acre-foot of water, Blanchard said.

Because the principal business of the utility is to supply water for 1 million people in Alameda and Contra Costa counties east of San Fancisco Bay, the reservoir behind Pardee Dam on the Mokelumne River must be controlled to keep water going in the river to downstream users with vested rights, and yet store water for controlled release to the 90-mile water-supply canal. Only fairly accurate estimates of supply and runoff could enable the utility to do this, Blanchard said.

Knowledge that plenty of water would be available this year enabled A. S. Murphy, San Francisco lumberman and owner of the Flying M ranch in northeastern California, to put in additional pasture and hay land for his 2,000 head of beef cattle.

In Ogden, Utah, Keith Orme, secretary-treasurer of Amalgamated Sugar Company, pointed out that the forecasts influence overall management policy, plus decisions in each operational season on contracts for more than 100,000 acres of sugar beets in Utah, Idaho, and Oregon.

In Oregon, Paul House, manager of the Owyhee Project North Board of Control, said early spring water-supply forecasts make it possible for water users to plan far enough in advance of planting time to take advantage of a surplus of water or be ready for a short supply.

Warren G. Goines, senior engineer for Bechtel Corporation, said the water-supply forecasts play an important part in designing and supervising construction of dams, like a proposed dam in Buffalo Rapids on the Flathead River for the Montana Power Company, and Round Butte Dam on the Deschutes River in Oregon for the Portland General Electric Company.

The Santa Fe Railway Company indicated its interest and dependence on the snow survey water-supply forecasts in a crop report late last summer, in which it noted that "water supplies for the current irrigation season are fulfilling earlier predictions that 1962 would be a good water year."

The benefits of snow survey-based water forecasts also are fresh in the minds of Spreckels Sugar Company of San Francisco and sugar beet growers in Fallon Irrigation District of Nevada. Early forecasts indicated a particularly tight water situation for 1961, Agricultural Manager Hugh F. Melvin said. Consequently, no beet acreage was contracted in the area—saving growers the cost of planting a crop that might have failed. The company was able to make other plans to avoid loss in production. This year, water was apparently going to be plentiful, and contracts were again signed between Fallon growers and Spreckels.

Other snow survey cooperators in western industry include the Idaho Power Company, the Public Service Company of Colorado and New Mexico, Utah Power and Light, Washington Water Power Company, and Puget Sound Power and Light Company. Southern California Edison, Pacific Gas and Electric, and Pacific Power and Light are among firms which have established and measure snow courses and contribute this information for the cooperative snow survey.

Banks and other credit agencies also are among the various business and commercial interests that rely upon water-supply outlook information to assure themselves that agricultural and industrial users have an adequate water supply when they submit a plan of operations for support or request for credit.

•

Three stock ponds he built through the West LaMoure County Soil Conservation District program have enbled Francis Podenski of North Dakota to save 2 hours of labor a day he previously spent hauling water from town.

Campsite Outpays Cattle

For Part-time Farmer

By Robert E. Myers

AN odd circumstance put the James Gordon family of Newfield, N. Y., out of a thriving part-time cattle business and into an even more profitable recreational venture.

When Gordon's rapidly developing herd required better watering facilities, he built a half-acre livestock watering pond with help of the Soil Conservation Service. It is one of the measures developed in his conservation farm plan through the Tompkins County Soil Conservation District with which he has been a cooperator since 1952. Others include contour stripcropping, pasture improvement, and woodland fencing.

But as his herd expanded, Mrs. Gordon's health grew steadily worse. An examination by a specialist revealed she was allergic to cattle!

Without hesitation, Gordon, who is employed full-time in town, sold his herd and put his farm into the "Soil Bank." The new pond stood unused. Two circumstances in particular prompted him to convert their idle farm into a public campsite—Willowood—after it was out of the Soil Bank:

His Boy Scout troop had had many enjoyable times camping by the pond. Also, just half a mile from the Gordon farm is Robert H. Treman State Park, from which several of the many campers turned away because of crowded conditions had asked the Gordons' permission to camp in their vacant meadow overnight. The farm also is within short traveling distance of two other State parks, Cornell University, the New York State wine cellars, and Cayuga Lake, so that their proposed camp could serve touring campers taking short side trips.

With encouragement from the Finger Lakes Association, the Gordon family began work on their camp. The first year, 1960, they were able to prepare 10 campsites of 1,000 square feet each, located among the trees to give the campers privacy. The next year they developed a group of camping sites in an open area, for campers who enjoy being together.

Today there are 30 campsites, each with a fireplace, tent platform, picnic table, and garbage cans. There is a centrally located well, and sanitary facilities for each 15 families.

The farm pond, with two docks and up-to-date safety equipment and rules for its use, is next to a likewise well-equipped athletic field and is the center of activity. Each Saturday and some Wednesd evenings, the Gordons organize big campfire program. The Coun Board of Health determined t standards for health and pon safety.

Willowood has had campers fro England, Canada, and many States.

The small barn was converted into an office and store, of which 14-year-old Linda is manager. Son Jim, 17, is the general camp manager, and Scottie, 7, is "good-will ambassador."

"Many people think that once you have built a few campsites you can sit back and rake in the money, but this isn't true," Mrs. Gordon said. "A good campsite requires a lot of time and hard work, as we have learned from experience. Without our three children, we couldn't have developed Willowood. We couldn't have possibly hired someone to do all the work. This family venture has been a good education for our children. It gives them responsibility. We all enjoy making Willowood a pleasant place to camp, and it pays well, too."

Gordon gave a hint of how well: "We are realizing more from our Willowood campsite than we did from our part-time farming operation."

The former livestock water pond being enjoyed by Willowood campers.

Note.—The author is biologist, Soil Conservation Service, Batavia, N. Y.

Swapping Cropland For Grass "Good Business" In Great Plains

By H. A. Wiltzen

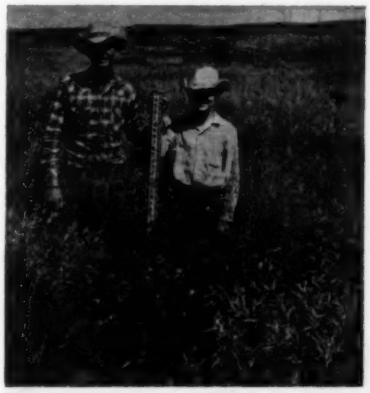
LOUIS B. Salsbery of Whitewater is one of many Montana farmers who is swapping cropland for grass and betting he'll come out well ahead. In fact, he is sure he already has.

Three years ago, he had more problems than he figured a man had a right to. He sorely needed more tame pasture. Then, raising annual hay crops by late-seeding of spring flood areas wasn't working out. Often he lost the crops and had to buy hay at a high price. Salsbery had gully trouble, too, where occasional heavy runoff coursed across the tilled fields.

Grass had been Salsbery's main crop. He knew its value in the control of erosion, and suspected that, weighing income against cost, grass might do better than grain. Salsbery has been careful for many years to practice conservation use of his grass. He sees to it, for example, that the cattle do not take more than half the forage produced each season on his native range.

The new Great Plains Conservation Program made it possible for him to make the change faster than he otherwise might have done. With the help of the Soil Conservation Service working with the Phillips Soil Conservation District, Salsbery worked out a complete soil and water conservation plan. That was in 1959, soon after Phillips County was designated in the program.

His plan called for seeding of 78 acres of cropland to permanent hay and pasture. He says that not only will take care of future erosion, but will mean grass from now on when his cattle need it most. Other money-saving benefits include being able to trim hay costs to a realistic minimum and dispensing with some of his more expensive machinery.



Louis and Wayne Salsbery measure irrigated smooth bromegrass-alfalfa hay stand.

The plan also includes water developments to permit uniform use of all his grazing lands. By the time Salsbery finishes work on his plan next year, he also will have cross-fencing for better management of his grass. He is certain his ranching operation will have been strengthened.

Their irrigation-stockwater dam.

"We are supposed to get 12 inches of rainfall a year here, but none of us can remember when we got that much," Salsbery said. "This is grass country; history has proved it. We are better off with grass and hayland in a livestock operation. This plan, when I'm through getting it on my ranch, will give me the best use of moisture I can get. I'm increasing output, cutting costs, and taking out some of the risk. That's just good business, any way you look at it."

Note.—The author is work unit conservationist, Soil Conservation Service, Malta, Mont.

Have You Seen?....

- "Land and Water Resources —A Policy Guide," published by USDA. This 73-page report by the Department's Land and Water Policy Committee makes recommendations for achieving a balanced program of land and water resource development, improvement, and adjustment. It grew out of three questions posed at the January 1962 National Conference on Land and People: How can better use be made of the land currently in farms which in the foreseeable future will not be needed for crop production? How can the rapidly growing demand for land for recreational, urban, and other uses be satisfied? How can resources be used to generate new economic opportunities for 1¼ million underemployed persons in rural areas?
- "Basic Statistics of the National Inventory of Soil and Water Conservation Needs," USDA Statistical Bulletin 317. In addition to the statistics, there is a brief discussion of the findings, land capability and land use, conservation needs on the inventory acreage, and watershed project needs.

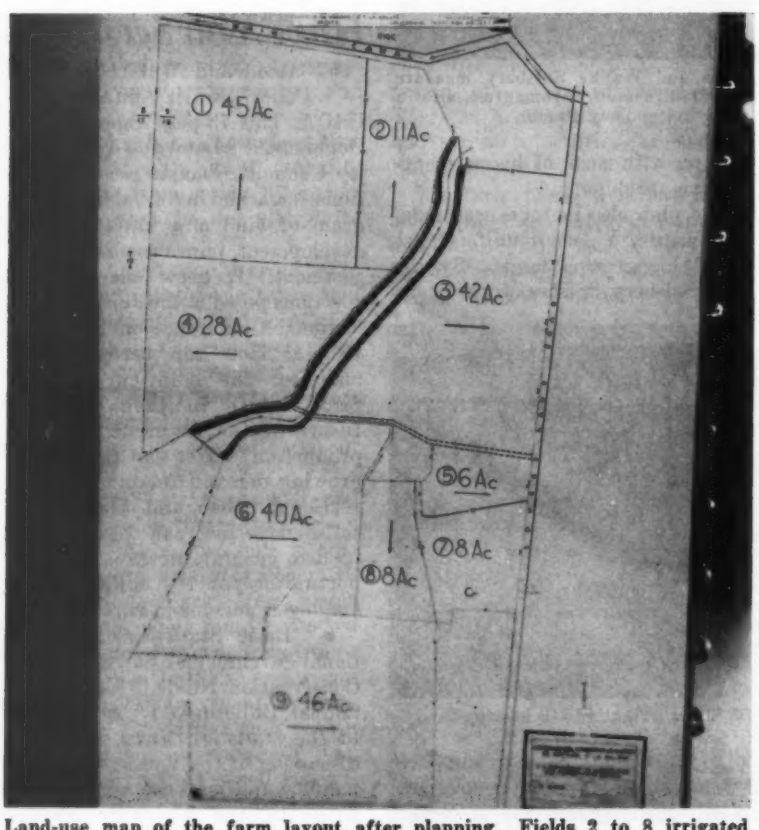
Planning for Conservation Pays, too!

By Billy S. Peavy

IT took California farmers Tony LaSalvia and David DeGregori just a year to develop a conservation plan that has changed their rundown alkali-ridden farm near Los Banos into an efficient and profitable livestock-orchard unit. Ordinarily, a plan for overhauling 250 irrigated acres would take years, but they wanted quick action and got it.

As the old Brand farm was when they took it over, it simply couldn't be managed efficiently—too many fields, odd-shaped fields, irrigation ditches hard to maintain, and individual field acreages and soil conditions unknown. After the "face lifting," these problems vanished. Now there are only 9 fields instead of 15. They are largely squared off for more efficient irrigation and cultivation, measured and numbered; and a soils map shows the kind of soil in each field. Another map of the farm, made to scale on an aerial photograph, shows where everything is.

After soil and engineering surveys were made by the Soil Conservation Service at the request of the Los Banos Soil Conservation District to which they had applied for help, the new owners worked out their overall plan and immediately began to carry it out. They brought in heavy earthmoving equipment, ripped out the old, meandering fences, and dozed in the crooked, poorly built irrigation ditches.



Land-use map of the farm layout after planning. Fields 2 to 8 irrigated cropland; fields 1 and 9 irrigated pasture.

Four of the original fields included 96 acres of potentially good irrigated pastureland but had no water rights. The land was dotted with bare alkali spots and saltgrass. Dry sloughs cut through the fields. Even if irrigation water had been available, the land was much too rough to get uniform irrigation, and there were no drains to carry off excess water necessary for leaching out the salts.

LaSalvia and DeGregori decided to drill a well to irrigate these dry pastures, now divided into only two fields, with the fences rebuilt along soils lines where practicable. Having soils of the same texture and depth in the same field, made it easier to irrigate all parts of the field to uniform depth.

Next, to get rid of the alkali, 7,500 feet of new, deep drain ditches were built. A fescue-trefoil demonstration plot, sponsored by the Los Banos district on the same kind of alkali land a few miles away, had settled any doubt they could convert this alkali land to good irrigated pasture.

Another big problem was taming Los Banos Creek, which cuts through the middle of the farm and had flooded and ruined crops every few years. Its channel was

Note.—The author is soil conservationist, Soil Conservation Service, Merced, Calif.

Los Banos Creek looked like this before channel was improved.

straightened and cleaned, and more than a mile of dike was built on either side to keep the floodwaters within banks.

An irrigation ditch also was needed on each side; but the soil was deep and sandy and would drink up water like a sponge. A mile of concrete-lined ditches were built to overcome that problem.

All the land except the creek bed, or 236 acres, was leveled to make proper irrigation and drainage possible. One field of alkali land was greatly improved by having a thick layer of good loam fill spread over it, making possible easy germination of grass seeds.

By 1962, only 3 years after the program was begun, results already were striking. Clear, fresh irrigation water runs in weed-free concrete ditches. Good irrigated pasture grasses now cover the old, alkali spots. A vigorous young orchard covers a part of the land to help diversify the program.

LaSalvia and DeGregori report that many hours have been saved by the new arrangement of fields and irrigation system layout, and that thousands of gallons of water have been saved by the concrete ditch lining. Will this program also pay off in dollars?

This is how it looked after it was straightened and diked.

"It has already begun to pay off," DeGregori said. "Our almond orchard begins bearing this year. Our net income is increasing every year. It would have been impossible to make any money on this farm the way it was. We're not worried about getting our investment back."

"Mr. Will"—

Dedicated Conservation Banker

FOR more than a half century the name William Wilson Campbell of Forrest City has been synonymous with sound banking and soil conservation in Arkansas.

Farmers know "Mr. Will," as he is affectionately called, as the banker to turn to when they need a crop loan, or money to buy a new piece of farm equipment or finance a soil conservation plan.

Conservationists know him as a dedicated disciple of good land use and one who has played a prominent role in the organization and operation of the St. Francis County Soil Conservation District. All of his farmer customers are district cooperators; and the bank's policy has been to make loans for soil and water conservation improvements.

Mr. Will is chairman of the Board of the National Bank of Eastern Arkansas, where he started in 1909 as a bookkeeper and became president in 1923. Under his guidance, its resources have grown from $72,000 to more than $12 million, with capital assets of more than $1,400,000. The bank has never passed a dividend, suspended payment on deposits, or foreclosed on a farm, even though it presently has more than $6 million in outstanding loans—a lot of them farm loans.

"Mr. Will" William Wilson Campbell.

Besides being one of the most successful country bankers in America, Mr. Will is nationally known as a farm expert with broad knowledge and experience in soil conservation. He got interested in soil conservation back in 1935, when a demonstration project and a CCC camp were established in St. Francis County. Some of the land in the county had been in cultivation for 100 or more years and was so infertile that many farmers believed it was completely worn

His bank.

out. But those "wornout" farms soon were being transformed into highly productive units.

When the first State soil conservation district enabling act in the Nation was passed in Arkansas in 1937, Mr. Will became a prime force in organizing the St. Francis County district. He was elected a supervisor on the original board, and has served in that capacity continuously since.

During the last quarter-century, Mr. Will has preached soil conservation with a fervor almost equal to that of his old friend, the late Hugh H. Bennett. "Fertile soil is the first necessity for profitable farming" has been his text.

Talk to Mr. Will, and he will tell you about farmer after farmer whose crop yields have doubled and tripled after a few years of soil conservation farming. One, whom he identified only as "Farmer A," was operating a farm 25 years ago that was so eroded and depleted of fertility it took 700 acres of cotton to produce only 198 bales; and corn wouldn't yield enough to justify its cultivation. Today, this same farm is one of the finest in the district. It is easily worth $400 an acre, and yields 1 to 1½ bales of cotton and 60 to 70 bushels of corn an acre. The owner has built a $35,000 home, and his farm has modern, labor-saving equipment.

Mr. Will likes to point out that "Farmer A" has money, security, good land, and doesn't owe anything—and that it all came from the soil. And, he adds, there are hundreds of farmers in the district who are demonstrating the soundness of conservation to a degree that cannot be disputed.

While soil conservation has contributed greatly to the overall welfare of farmers, the community, and the town, Mr. Will says there still is a potential benefit, as yet unrealized, which sometime may prove a boon equally as great as that of increased income and more efficient farming. It is his belief that, as each new farmer joins the soil conservation district program, the farm problem will be "reduced by one," if there should be a downward adjustment of farm prices. He explains it this way:

Soil conservation farming permits more efficient production at lower cost. It enables farmers to diversify and add profitable new enterprises, and not be financially dependent on a single crop. For example, 25 years ago farmers in St. Francis County depended almost entirely on cotton. Through their soil conservation district program, they've added soybeans, rice, fruit, and vegetables; as well as corn, oats, hay, and pasture that have made an expansion of livestock production possible.

St. Francis is an agricultural county, and farming is the backbone of the economy of both the county and of Forrest City, the county seat. According to Mr. Will, soil conservation definitely has increased net income of both farm and town businesses, and this has had a corresponding effect on bank deposits in Forrest City. Supporting him are figures showing that during a period when bank deposits in the United States increased by 160 percent, and in Arkansas by 371 percent, deposits increased in Forrest City banks by 416 percent!

An improved economy had something to do with this, of course; but Mr. Will is convinced that soil conservation was responsible to a large extent for the big spread between the increase in deposits nationally and locally.

Another angle which Mr. Will believes should appeal to country bankers is that sound loan opportunities are opened when farmers become soil conservation-minded. While conservation farming enables farmers to make phenomenal financial progress, the adjustment to a complete conservation plan of operation frequently requires the use of borrowed capital. Because of this fact, he maintains that every country banker should assume a key position in developing a sound program of soil and water conservation.

Mr. Will's work in soil conservation has been the subject of articles in banking and national popular magazines and newspapers. He recently was named to the Salk Fund Council. Other recognition has included his selection as *Progressive Farmer* "Man of the Year," Arkansas chairman of the U.S. Savings Bond Program since the first bonds were offered in 1941, membership on the Hoover Commission to study Government lending, life membership in the 4-H Clubs, and chairman of the American Bankers Association's Agricultural Council.

In 1949, he was awarded the degree of Doctor of Laws by the University of Arkansas, partly because of his leadership in the conservation of natural resources.

—HOWARD T. BARNETT

$170,000 SAVING SEEN

In Irrigation Canal Lining

By Ray H. Kerr

TWELVE years ago the Wilson Irrigation Company of Weber County in Utah lined the first section of its main canal with concrete. This year saw the completion of 45,000 linear feet of lining since then, with resultant major savings in water and other costs.

The company diverts approximately 40 second feet of water from the Weber River into about 10 miles of main canal serving close to 4,000 acres of cropland. The soil through which the canal flows is very light textured, and seepage losses were high from the originally earth-lined canal, the banks of which were weak in places. Early each year, the canal's wetted surface would decrease losses, but later in the season weed growth backed up the water and losses became excessive—estimated to be 30 to 40 percent.

In 1950 the company entered into a cooperative agreement with the Weber Soil Conservation District, the Utah State Agricultural Experiment Station, and the Soil Conservation Service to field test certain types of lining. The test lining resulted in a complete plan to line the system during the next 14 years. About 1,200 feet at the head of the canal, with a typical soil condition, was the first lined; and it proved the value of lining in savings in operation, maintenance, and water.

By the end of 1962, nearly 5,600 cubic yards of concrete had been poured, at an average cost of $4 a linear foot, not including the cost of measuring devices and turnouts. About 15,000 linear feet of canal remained to be lined after 1962. The canal ranges from 2 to 4 feet wide at the bottom, with corresponding depths. Concrete was placed by hand, using 10-foot templates, and by a power-operated slip-form machine.

Company Secretary-Treasurer J. J. Gibson said the records show that investment in the lining, since that early beginning, will ultimately reach about $170,000. Agricultural Conservation Program funds have cost-shared about $85,000 of this amount, and the Soil Conservation Service, through the district, has furnished surveys, plans, and specifications.

Company officials believe that savings in water, maintenance, and operation will rapidly repay the cash and labor outlay. Assuming an average streamflow of 40 cubic feet per second and a 30 percent loss, in a 5-month irrigation season, the loss would amount to 2,500 acre-feet, Gibson said. Current contract price for water delivered to the company is $2 an acre-foot. Thus the lining theoretically could save $5,000 a year in water alone.

Alvin Anderson, company president, said moreover that the lining in the upper portion of the canal meant the difference between a crop and no crop during the 1961 critical water shortage.

◆

Almost $100 billion—nearly one-third of the U. S. consumers' annual expenditure—goes for food and clothing produced by or made from the products of agriculture.

◆

Investment in agriculture represents $21,300 for each farm employee, compared with 15,900 for each worker in the manufacturing industry. Ohio farm economist predict future capital investments of more than a quarter of a million dollars for some farms.

Note.—The author is work unit conservationist, Soil Conservation Service, Ogden, Utah.

This Wilson Irrigation Co. concrete-lined canal near Taylor, Utah, was a hand screed job and cost $5 a foot.

Economical Erosion Control Structures Replace Expensive County Bridges

By Eugene E. Solomon

ENTHUSIASTIC cooperation between all interested parties has resulted in an outstanding and money-saving road program in Nebraska's Washington County. The cooperators include farmers, county road officials, the Papio Soil and Water Conservation District supervisors, local Soil Conservation Service technicians, and a local construction contractor.

It was back in 1935 that the county began to replace bridges with erosion-control structures. Since then, nearly 200 of these structures have replaced expensive bridges. A local contractor who installed nearly all of the county's drop-inlets reports that 100-foot span bridges have been replaced by drop-inlets with a 4- by 4-foot barrel. These were built at a fraction of the cost of the bridge. Clarence Kuhr, county road superintendent, says: "Once the drop-inlets have been installed, our troubles with that piece of road are over."

Road officials estimate that drop-inlets have saved the county nearly $1 million during the past 27 years. This included a $10,000 a year saving in maintenance cost as well as the original cost of the bridges. The most expensive road structure yet built was installed in 1961 at a cost of $19,000. This structure replaced a bridge 120 feet long that had fallen into the creek below. It was estimated it would have cost $40,000—or more than twice as much—to replace the deck of the bridge, not counting the cost of maintenance, and perhaps even replacement in a few years.

Even though the construction of drop-inlets has meant great savings to the county over the past 27 years, there is still a greater benefit. It has demonstrated to farmers the benefits of applying erosion-control measures of this kind. Every time a farmer drives to town, chances are he crosses one of these bridges. He observes how a gully has been healed after a road structure was put in. This observation often inspires him to develop gully-control structures on his own farm.

Structure with water behind it and no maintenance needed after nearly 10 years. Road was graveled and roadsides grassed.

Because the drop-inlets stabilize grade in drainageways, smaller erosion-control structures can be built on the farms above the road structures. With stable outlets installed, farmers can develop grassed waterways, terraces, and contour farming above the structures. In other words, road structures often are the key to applying complete conservation on adjoining farms.

Hjalmer Quist, chairman of the Papio district says: "When all of the local agencies, as well as farmers, work together, it is bound to result in more and better conservation on the land. Everyone benefits, both town and country people."

Old, unsafe bridge—third built across gully west of Herman, Nebr.—being replaced in 1953 by drop-inlet.

Note:—The author is work unit conservationist, Soil Conservation Service, Blair, Nebr.

Primrose Path for Florida Beef Cattle

By Thomas N. Shiflet

CATTLE "walkways" are an important part of a complete soil and water conservation and livestock plan that has enabled Mark Richard to double his beef production on three salt marsh range units in Cameron Parish in Louisiana. The cattle walkways, proper use of range and pasture forage, deferred grazing, brush control, and pasture improvement are the major features of his plan developed through the Soil Conservation Service in cooperation with the Gulf Coast Soil Conservation District.

One place formerly could not be grazed at all until 2 miles of walkway was built. Beef production on the other two has increased from an average of 24,000 pounds a year to 43,000 pounds, because of a higher marketable calf crop and heavier selling weights. Improved breeding, creep feeding of calves, supplemental feeding of cows and bulls, and other livestock management practices have played an important role.

Cattle using a walkway on salt marsh rangeland more than ¼ mile from high land on Richard ranch. Richard says the walkways are the key to his ranching success. They enable the cattle to graze all the range evenly, and provide resting and feeding areas and relief from high water and mosquitoes. Formerly, they would graze only ¼ mile into the marsh.

Note.—The author is range conservationist, Soil Conservation Service, Lake Charles, La.

DESIGN OF REGIONAL ACCOUNTS. Prepared by the Committee on Regional Accounts. Edited by Werner Hochwald. 280 pp. 1961. Johns Hopkins Press, Baltimore, Md. $6.00.

Here is a book that brings together some new concepts related to resource management and planning—a field which is the concern of our policy makers and administrators in the field of soil and water conservation. It points out the intricate relationships that exist among the different parts of the economy in an area or region.

The papers presented are the product of the first Conference of Regional Accounts in September 1960 at St. Louis, Mo. Dr. Harvey S. Perloff, director of regional studies for Resources for the Future, Inc., initiated the idea that regional accounts could become useful systems of information flow for public and private decision making.

The book deals with explorations by economists into ways in which a system of economic accounts can be useful and be established for regional analysis. Business accounts and national economic accounts have in common a framework to describe relations among the transactors of business and industry.

It points out that: "In the public sector state and local officials make decisions about such things as public services, expenditures and taxes, transportation facilities, and the use of land and of other resources such as water, forests, and parks. In these efforts they can be materially aided by the engineer and physical planner on the one hand, and by the social scientist on the other. Thus, in order to decide on the desirability of specific objectives and a plan to implement them, benefit-cost analyses are needed."

These papers can be useful to the student or teacher of regional economics and development and to conservationists and others concerned with analysis of the national economy and public and private decision making.

—T. A. NEUBAUER

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LAND ECONOMICS RESEARCH. Edited by Joseph Ackerman, Marion Clawson, and Marshall Harris. 270 pp. 1962. Resources for the Future, Inc. Johns Hopkins Press, Baltimore, Md. $4.00.

"Land Economics Research" is a scholarly presentation of particular interest to economists in universities and in Government. This book consists of papers presented at a symposium on land economics research jointly sponsored by the Farm Foundation and Resources for the Future, held at Lincoln, Nebr., in June 1961.

The subjects are grouped in four major headings: I Scope, Problems, and Objectives; II Theoretical Considerations; III Procedural Framework; and IV Program and Organizations.

Authors of the papers are Marion Clawson, N. M. Kelso, John F. Timmons, Coleman Woodbury, Roy E. Huffman, Ranier Schichele, Walter G. Miller, M. Mason Goffrey, Howard W. Ottoson, Glenn L. Johnson, Gene Wunderlich, W. L. Gibson, Jr., Marshall Harris, Harry A. Steele, and Joseph Ackerman. This distinguished group of economists, administrators, and professors has provided for posterity an intellectual exchange on land economics problems and research for those concerned with land use and land institutions.

These authors are impressed with the interrelationships between man and his environment—what may inclusively be termed "Nature." They recognize that land problems are no longer as nearly agricultural as they once were. They make the point that the uses of land are often highly interrelated, sometimes actually on the same tract of land, or are potentially so, and that land uses often have physical, economic, and institutional interrelationships.

They recognize, too, that many problems affecting land require study from directions other than economics, including those of sociology, political science, law, and other disciplines.

Because of the authors' different interests, their essays approach land problems from varying theoretical backgrounds.

The prophecy is made that the requirements of a doubled or tripled population in the next 50 years can be met from our land and water resources by intensifying their use in similar proportions. The land and water problems of the future will arise from increasing competition and shifts between crops, grassland, forests, recreation, urban developments and other nonagricultural uses, and from expanding long-term requirements and similar demands. The problem of distribution of ownership and access to resources will continue to be an important phase of land economics studies.

—NORMAN A. BERG

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The above publications may be obtained from the The Graduate School of the U. S. Department of Agriculture, Washington 25, D. C.